DIP #620

DIP - 620 USMLE MSK Series (Knee, Hip)

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- In today's podcast, we're going to be addressing the **knee, hip and ankle**.
- So this is a continuation of the series on the **USMLE MSK**, these are things that are tested many times.
- If you just know what the **USMLE** requires you to know, you're typically going to be in good shape for the exams.
- So we've done **elbow**, we've done **neck**, we've done **back** again.
- If you miss that piece, I will encourage you to listen to it.
- But today I'm gonna hit **knee, hip and ankle**.

Patellofemoral pain syndrome

- So what are the classic **knee pathologies** our friends at the **NBME** love to test?
- Say for example they give you a question about literally a woman, and this woman is like in her **20s or 30s**.
- The person is an **athlete**, the person is a, you know, person that's very physically active.
- And then you're told that this person has pain around their **knee**.
- In fact, sometimes they can make these questions very **non-specific**.
    - They tell you that this person has pain around their knee.
    - Whenever they **run** it makes the pain worse.
    - Whenever they're going **downstairs**, it makes the pain worse.
    - After they've **sat for a long time**, it makes the pain worse.
- When you see something like this, what should you be thinking about?
- I really hope you're seeing that, Devine. This sounds a whole lot like **patellofemoral pain syndrome**.

- **Patellofemoral pain syndrome** is something you want to make sure you can recognize for your exams.
- Typically, we're going to find it in **women** on the **USMLE**, and then usually it's going to be **young women** that are physically active.
- Usually they're going to be in their **20s, 30s**.
- When you see something like that, I want you to think of **patellofemoral pain syndrome**.

- Again, they can make the **knee pain** very non-specific.
- Basically they just have pain around the **Patella**. That's why it's called **patellofemoral**.
- You know, sometimes you may even see the term in your exam studies, **peripatellar pain**.
- The word **peripatellar** just means around the **Patella**.

- Again, it's going to be a person that is young.
- Typically a person that is, you know, less than **45** or thereabouts on your exams.
- And how do you confirm the diagnosis?
- This is something you're going to be doing a **clinical diagnosis** for, right?
- Just basically press against the **Patella**.
- If you can reproduce their pain, or you try to move the **Patella** up and down, up and down, up and down, and you reproduce their pain, they likely have **patellofemoral pain syndrome**.

- And the thing is, if they ask you, oh, what's your most appropriate next step in management?
- Literally all you need to do is follow a few **conservative measures**:
    - The activities that worsen the pain (**high impact running** and all those things), avoid those things.
    - **Activity modification** is a big one.
    - The second thing you should keep in mind is that you should try to **strengthen the muscles around the knee joint**.

- The thing is, when you strengthen — you know, just like we have **pelvic floor muscles**, where if your pelvic floor muscles are weak you're going to start having things like **pelvic organ prolapse** or **incontinence**, right? Your pelvic floor muscles are very important support structures for your pelvic organs.
- Well, the thing is, your **knee joint** also has some muscles that are kind of important for structure and support.
- So if you have **patellofemoral pain syndrome**, it's helpful to strengthen those muscles around the knee joint, especially the **quadriceps muscles**, right, especially the **quadriceps muscles**.
- We call these things **quadriceps strengthening exercises**. They are very helpful for **patellofemoral pain syndrome**.
- It's going to basically give your knees good support, right? And you're less likely to have this.

- You can also **ice** the knee joint.
- You can use **NSAIDs**.
- All these things are perfectly fine as management for **patellofemoral pain syndrome**.

- Is there another condition that you manage well by strengthening the muscles around your knee joints?
- It's actually just **osteoarthritis**, right?
- So like for example, if you have **knee osteoarthritis**, you know your joints are kind of rubbing against each other.
- You can try to give that joint better support by doing a **quadriceps strengthening exercise**. .

Prepatellar Bursitis

- Now what if they give you a question about a patient and they tell you that this patient, you know, for the past few days he has been having pain just in front of his **knee**, right?
- He has been having a lot of pain just **anterior to the knee**.
- And then they tell you that he has also noticed that he has had a lot of **swelling**, just **anterior to the Patella**.
- So **pain** — notice the key feature here is **anterior, anterior, anterior**.
- They have **pain in the anterior knee**.
- Again, just anterior to the **Patella**, they have a lot of **swelling**.
- When you see something like this, I want you to think of **prepatellar bursitis**.
- Right. I want you to think of **prepatellar bursitis**.

Prepatellar Bursitis

- **Prepatellar bursitis** is just pretty much inflammation of a **bursa**.
- A **bursa** is inflamed → it can present with **swelling**.
- Remember from **Step 1** when you studied the **cardinal signs of inflammation**:
    - **Calor** → heat (it's hot)
    - **Rubor** → redness
    - **Dolor** → pain
    - **Tumor** → swelling
- So:
    - You're going to see **pain anterior to the knee**.
    - You're going to see **swelling**.

Management on Exams

- If they give you a question like this and ask for your next best step:
    - In **prepatellar bursitis**, you should **aspirate the bursa**.
- Why?
    - Sometimes **prepatellar bursitis** is due to **infection**.
    - You want to make sure it's not infected, because if it is, you need to treat the infection.
    - Otherwise, it could **burrow and destroy the Patella**.

- Be especially worried about infection when the bursitis is **acute**.
    - **Acute presentation** → be concerned about infection.
    - **Chronic presentation** → probably not infection, more likely due to repeated activity.

Common Causes of Prepatellar Bursitis

- People who **kneel often**:
    - **Florists**
    - **Gardeners**
    - People who work on the floor
    - People who **play with kids**
- Trauma to the knee can also cause the problem.

Pes Anserine Bursitis

- Now what if they give you a question about a patient and you're told that this patient has **knee pain**?
- They tell you: “For a couple of days I’ve been having this pain on my **knee**.”
- And they tell you that they have this pain on the **inside of their knee below the knee joint**.
- In that circumstance, you want to think about **pes anserine bursitis**.
- Sometimes on exams:
    - The word is spelled as **PES**.
    - Or they just call it **anserine bursitis**.

Classic Presentation of Pes Anserine Bursitis

- Pain is on the **inside of the knee below the knee joint**.
- That means **medial knee pain**.
- Literally:
    - They’ll tell you **the inside of the knee hurts**.
    - It’s **below the joint**, **below the joint**, **below the joint**
- And many times these people, they will have this **pain** that happens with activity.
- And sometimes the **pain can be worse at night**.
- The **pain can be worse at night, the pain can be worse at night**.
- And typically, we tend to find this in people of all ages.
- But many times, you may see this in a person that is **older**.

- Remember I said that **patellofemoral pain syndrome** classically tends to be in a **younger person**.
- **Anserine bursitis** seems to be in an **older person**, but it can also be in **young people**.
- So please don't take these as **hard and fast rules**.
- Don't say, “Devine said that **patellofemoral pain syndrome** can never be in an old person.”
- No — it **can** be an old person, but classically it will be a **young person**.
- **Anserine bursitis** classically will be in an **old person** that may have **osteoarthritis**.
- **Osteoarthritis** has a very strong association with **anserine bursitis**.

- And honestly, what you need to do for these people is just **rest, ice, and NSAIDs**.
- That's it.
- That's like the name of the game for many of these **musculoskeletal disorders**: **rest, ice, and NSAIDs**.

Paediatric Pathologies to Remember

- Are there two other pathologies that you need to know for your **USMLE exams**?
- Yes — these are more **pediatric** things where they have **pain in their extremities that is worse at night and relieved by acetaminophen**.
- I really hope you're saying:
    - "Oh, Devine, yeah. You know, for kids, especially if it's like **bilateral calf pain**, **bilateral lower extremity pain**, worse at night, relieved by acetaminophen → I'm going to be thinking about **growing pains**."
- And also remember:
    - If you have an **osteoid osteoma**, you have **calf pain** as well.
    - Typically it's going to be **unilateral calf pain**.
    - You may palpate a **bony mass**.
    - **Osteoid osteomas** are also worse at night and relieved by **acetaminophen**.

Iliotibial Band Syndrome

Lateral Knee Pain

- Now what if they give you a question about a person with **pain at the lateral knee**?
- They tell you the **pain feels like a knife**, very **sharp pain**.
- The person is complaining of very sharp pain on the **lateral knee**.
- They tell you that the thing that really makes it bad is when they **run**.
- When they **flex and extend the knee, flex and extend the knee, flex and extend the knee** — running makes it worse.
- When you see something like this, I really hope you're thinking of **IT band syndrome (iliotibial band syndrome)**.
- **Lateral pain on the knee → iliotibial band syndrome**.
- Again, **conservative measures**: **rest and stretching**.

Quick Review

- **Anterior knee pain + swelling → Prepatellar bursitis**
- **Pain around the knee with running, going downstairs, sitting long → Patellofemoral pain syndrome**
- **Medial knee pain (below the joint) → Anserine bursitis**
- **Lateral knee pain (sharp, with running/flexion-extension) → Iliotibial band syndrome**

Don’t Forget

- Don’t forget about your **ligament tears** for the knee:
  - **ACL** (anterior cruciate ligament)
  - **PCL** (posterior cruciate ligament)
  - **MCL** (medial collateral ligament)
  - **LCL** (lateral collateral ligament)
- And again, the key thing you're gonna see on your exams is you're gonna see a **popping sensation**.
- Person's gonna say: *“Hey, I have this popping sensation and then I just started having this really considerable pain.”*
- And the thing is, many times there's going to be a **large collection of fluid** that develops very quickly.
- They're gonna have this **big effusion**.
- And again, these are things you should be easily able to diagnose.

Stability of the Knee

- Normally, if you move your **knee joint**:
  - Extend out, put your knees at **90°**, move them forward and backward, side to side → your knees should be **pretty stable**.
  - You **shouldn’t have a lot of give**.

Anterior Drawer Test

- If they tell you that you stabilize the person's knee and pull the knee forward:
  - Stabilize the **distal thigh** with your hand.
  - Hold the **knee** and try to move it **forward, forward, forward**.
- What am I doing?
  - That's the **anterior drawer sign**.
  - We're testing the **ACL**.
- If you see a lot of **give** with the **anterior drawer sign**, that person has an **ACL tear**.

Posterior Drawer Test

- If you do the reverse:
  - Hold the person's knee at **90°**.
  - Stabilize the **distal thigh** firmly.
  - Move the person's **knee backwards**.
- If you get a lot of **give** → that’s a **PCL tear** (*posterior cruciate ligament tear*).

Side-to-Side Stress Testing

- How about **side to side**? Let's do side to side.
- If you push the knee **medially**:
  - Place your hands on the **outside (lateral side)** of the knee.
  - Push **medially**.
  - If there's a lot of **give**, that means the **medial part is weak → MCL tear** (*medial collateral ligament*).
- What exactly do I mean by pushing from the outside?
  - That's giving a **valgus stress**.
  - **Valgus stress = lateral stress**.
  - It tests the integrity of the **medial knee**.
- If you push the knee **from the inside (medial stress)**:
  - That's a **varus stress**.
  - **Varus stress = medial stress**.
  - It tests the integrity of the **lateral knee**.
- So:
  - **Valgus stress → MCL tear** if there's give.
  - **Varus stress → LCL tear** if there's give.

Summary of Ligament Tests

- **Anterior drawer test → ACL tear**
- **Posterior drawer test → PCL tear**
- **Valgus stress → MCL tear**
- **Varus stress → LCL tear**

Management

- All these maneuvers basically test **how stable are these ligaments**.
- To be honest, if they ask you for the management:
    - In general, for **ACL tears**, those people probably will need **surgery**.
    - People with **ACL tears** are probably going to need some kind of surgery.

- But for most of the other tears, like **MCL**, **PCL**, for example, just **conservative management**.
- Just **conservative management** — that's literally all you need to do.

Meniscal Tears

- Let's talk about the tear in the **meniscus**.
- Let's talk about **meniscal tears**.
- The key thing you're going to see is **pain along the joint line, pain along the joint line, pain along the joint line**.
- Many times you may see terms on your **USMLE exams** like:
    - **Locking**
    - **Grinding**
- It's almost like the knee is **locking** — you move the knee and then it kind of locks up.
- When you see that description, they're probably describing some kind of **meniscal tear**.

Key Exam Finding

- The key tenderness you're going to see on your exams is **pain along the joint line** on the affected side.
- Example:
    - Pain along the **medial joint line** → **medial meniscal tear**
    - Pain along the **lateral joint line** → **lateral meniscal tear**

How They Describe It

- You make this **clinical diagnosis** by:
    - Extend the person's leg fully (knee joint completely straight).
    - Hold the **distal femur**.
    - Take their **leg** and rotate it in a **circular fashion** (rotate the tibia).
    - You'll notice **locking, catching, grinding**.
- Again, they will have **tenderness around the affected joint line**:
    - **Medial joint line tenderness** → medial meniscal tear.
    - **Lateral joint line tenderness** → lateral meniscal tear.

Management

- Generally for these people:
    - **Rest**
    - **Ice**
    - **Strengthen the muscles around those joints**
- If you try all these things for **weeks** (especially for a **month**) and they're still not improving:
    - In that case, you should consider **surgery**.
- Although before you do surgery, you want to know what's going on:
    - It's helpful to do some kind of **imaging**.
    - Typically you're going to do an **MRI**.
    - But **only pick MRI if surgery is what you're planning to do**.

- If you're not planning to do surgery on this person, just recommend **rest, ice, strengthen the muscles around that joint**.
- OK? That's really what you do in these circumstances, on your exams.

Hip

- Right now, let's talk about the **hip**.
- I have a feeling that I'm not going to be able to get to my **ankle** because I have something that I need to literally run to in a few minutes here, right?
- But **hip, hip, hip** — the big things to know about hip:

Hip Pain Risk Factors

- If they give you any question about **hip pain** in a person with the following **risk factors**, what should you think about?
- For example:
    - A **child** with many **emergency room visits** for diffuse pain all over the body.
    - Then they tell you for the past couple of days they've been having **really bad pain in their hip**.
    - Or you see the same presentation, **really bad hip pain** in a person with **cirrhosis**.
    - A person with cirrhosis probably has it because they are a **big-time alcoholic**.
    - Or you see this in a person that has **very severe hip pain** and has been on **pharmacotherapy for giant cell arteritis** (on **high-dose steroids** for a long time).
- When you see these, I want you to think of **osteonecrosis of the hip**.

Osteonecrosis of the Hip

- They love to test it with **risk factors** on the **USMLE exam**.
- Classic **risk factors**:
  - **Sickle cell disease** → pain crises
  - **Alcoholism** / **Cirrhosis**
  - **Chronic steroid use** (e.g., severe asthma patients, giant cell arteritis patients)
  - **Lupus**
- **Pathophysiology**:
  - **Poor blood supply** to the **femoral head** → the femoral head can **die**.
- **Diagnosis**:
  - Get an **MRI**.
  - On MRI you'll see the **femoral head looks necrotic**.
  - Sometimes it can be completely **flat**.
- **Management**:
  - Many of these people are probably going to need **surgery**.
  - They may need **replacement of the hip joint**.
  - Thankfully, the **hip joint** is one of those joints you can replace.

Important Note on Osteonecrosis

- Don't forget, since we talked about **osteonecrosis** with alcoholism, lupus, sickle cell disease, and steroid use:
  - **Legg-Calvé-Perthes disease** is **another kind of osteonecrosis**.
  - This is **extremely high-yield** for your exams.
  - On your exam, instead of putting **Legg-Calvé-Perthes disease** as the answer, they may just put **hip osteonecrosis**.
  - Classically in a **child under age 10**.

Hip Pain and Cancer

- What if they give you a question about a patient with a history of **breast cancer** or **prostate cancer**, and they have a lot of **hip pain**?
- Think of **metastasis to the hip**.
- Some cancers can actually **metastasize to the hip** and cause pain.

Trochanteric Bursitis / Greater Trochanter Pain Syndrome (GTPS)

Lateral Hip Tenderness

- What if they give you a question about a patient with **tenderness around the lateral hip**?
- **Lateral hip, lateral hip, lateral hip**.
- The patient says:
  - "I have a lot of **tenderness around my hip**, especially the **lateral hip**."
  - "I have almost **pinpoint tenderness** around the lateral hip."
  - "I can move my hip completely fine. I don't have issues with **range of motion**."
  - "But when I try to **abduct my hip** (move the hip outwards), I have a lot of **pain**."
- Then I want you to think of **trochanteric bursitis, trochanteric bursitis, trochanteric bursitis**.
- Now, as you've seen me say in many of my podcasts (and I do this a lot in my classes), the **USMLE** sometimes will have **alternate names** for things.
- Another name you may see on your exams for **trochanteric bursitis** is **greater trochanter pain syndrome (GTPS)**.

Management of Trochanteric Bursitis

- For the most part, use **acetaminophen or NSAIDs**.
- If that doesn't work, you can **inject steroids into the joint**.

Hip Problems in Children

- Don't forget many of these **hip problems** can happen in **kids**:
  - **Newborn with a clicky hip** → think of **developmental dysplasia of the hip**.
    - Cause: **flat acetabulum** so the femur doesn't fit well.
    - Treatment: **Pavlik harness**.
  - **Child under age 10 with hip pain** → think of **Legg-Calvé-Perthes disease**.
  - **Child over age 10, especially obese, with hip pain** → think of **SCFE (slipped capital femoral epiphysis)**.